

### **AMENDMENTS TO THE CLAIMS**

Please amend the claims as follows:

1. (Currently Amended) A process for depositing a metal film on a substrate disposed in a processing chamber, said process comprising:

heating said a substrate having openings for forming one or more vias; and

introducing into, and removing from, said processing chamber, a process gas consisting of a metal source and a hydrogen source to nucleate said substrate with metal within the openings while controlling production of a concentration boundary layer by removing said process gas from said processing chamber after commencement of nucleation of said substrate, wherein removing said process gas from said processing chamber lasts from about 3 to about 12 seconds.

2. (Currently Amended) The process as recited in claim 1 wherein introducing and removing occurs multiple times to nucleate said substrate with a layer of metal of a desired thickness within the openings.

3. (Original) The process as recited in claim 1 wherein introducing and removing further includes pressurizing said processing chamber to a first pressure level upon introduction of said process gas and pressurizing said processing chamber to a second pressure level upon removing said process gas, with said first pressure level being greater than said second pressure level.

4. (Original) The process as recited in claim 1 wherein introducing and removing further includes introducing a purge gas into said processing chamber to remove said process gas from said processing chamber.

5. (Original) The process as recited in claim 1 wherein introducing and removing further includes introducing a purge gas into said processing chamber to remove said

process gas while maintaining a pressurization of said processing chamber at a constant level.

6. (Original) The process as recited in claim 1 wherein introducing and removing further includes introducing a purge gas into said processing chamber while decreasing a pressurization of said processing chamber.

7. (Previously Presented) The process as recited in claim 2 wherein introducing said process gas occurs for approximately 3 to 5 seconds and further including terminating removing said process gas after approximately 7-12 seconds and before repeating systematically introducing into, and removing from, said processing chamber.

8. (Original) The process as recited in claim 1 wherein introducing into, and removing from, said processing chamber, defines a nucleation cycle and further including repeating said nucleation cycle multiple times, defining a sequence of nucleation cycles, to form a metal nucleation layer upon said substrate, and varying a ratio of said metal source with respect to said hydrogen source during successive nucleation cycles in said sequence.

9. (Original) The process as recited in claim 1 further including forming, after introducing into, and removing from, said processing chamber, a bulk deposition layer of metal.

10. (Previously Presented) The process as recited in claim 3 wherein said first pressure level is approximately 15 Torr and said second pressure level is in the range of 1 to 3 Torr.

11. (Original) The process as recited in claim 1 wherein said metal source is tungsten hexafluoride,  $WF_6$  and said hydrogen source is selected from a group consisting of silane,  $SiH_4$ , molecular hydrogen,  $H_2$ , and diborane,  $B_2H_6$ .

12. (Original) The process as recited in claim 1 further including establishing an initial pressurization in said processing chamber, before introducing into, and removing

from, said processing chamber, said process gas, with said initial pressurization being greater than said first pressurization.

13. (Original) The process as recited in claim 12 wherein establishing said initial pressurization further includes introducing said hydrogen source while establishing said initial pressurization.

14. (Currently Amended) A process for depositing a metal film on a substrate disposed in a processing chamber, said process comprising:

heating said a substrate having openings for forming one or more vias; and

introducing into, and removing from, said processing chamber, a process gas consisting of a tungsten source and a hydrogen source to nucleate said substrate with tungsten by removing said process gas from said processing chamber after commencement of nucleation of said substrate with tungsten, wherein removing said process gas from said processing chamber lasts from about 3 to about 12 seconds.

15. (Original) The process as recited in claim 14 wherein introducing and removing occurs multiple times to nucleate said substrate with a layer of tungsten of a desired thickness.

16. (Original) The process as recited in claim 15 further including forming, after nucleation of said substrate with a layer of tungsten of a desired thickness, a bulk deposition layer of tungsten.

17. (Original) The process as recited in claim 16 wherein said tungsten source in tungsten hexafluoride,  $WF_6$  and said hydrogen source being selected from a group consisting of silane,  $SiH_4$ , molecular hydrogen,  $H_2$ , and diborane,  $B_2H_6$ .

18. (Original) The process as recited in claim 17 further including establishing an initial pressurization in said processing chamber, before introducing into, and removing

from, said processing chamber, said process gas, with said initial pressurization being greater than said first pressurization.

19. (Original) The process as recited in claim 18 wherein establishing said initial pressurization further includes introducing said hydrogen source while establishing said initial pressurization.

20. (Original) The process as recited in claim 19 wherein introducing and removing further includes pressurizing said processing chamber to a first pressure level upon introduction of said process gas and pressurizing said processing chamber to a second pressure level upon removing said process gas, with said first pressure level being greater than said second pressure level.

21. (Original) The process as recited in claim 19 wherein introducing and removing further includes introducing a purge gas into said processing chamber to remove said process gas from said processing chamber.

22. (Original) The process as recited in claim 19 wherein introducing and removing further includes introducing a purge gas into said processing chamber to remove said process gas while maintaining a pressurization of said processing chamber at a constant level.

23. (Original) The process as recited in claim 19 wherein introducing and removing further includes introducing a purge gas into said processing chamber while decreasing a pressurization of said processing chamber.

24. (Original) The process as recited in claim 19 further including repeating nucleating tungsten onto said substrate multiple times to form a nucleation layer tungsten upon said substrate, defining a sequence of nucleation cycles, and varying a ratio of said tungsten source with respect to said hydrogen source during successive nucleation cycles in said sequence.

25-30. (Cancelled)